

### **REMARKS**

Claims 1 and 17-27 are pending.

#### **Rejection Under 35 U.S.C. § 103(a)**

The Examiner asserted that claims 1 and 17-27 are unpatentable over Mueller et al. ("Mueller," U.S. 5,958,288) in view of Ernst (3,869,401) under 35 U.S.C. § 103(a). Applicants respectfully disagree.

Independent claims 1 and 18 recite an anisotropic copper etching agent consisting essentially of potassium hydrogen peroxomonosulfate having a concentration within a range of about 0.08 to about 2.0 mol/l, and acetic acid in a range of about 10 wt.% to about 75 wt.% relative to the potassium hydrogen peroxomonosulfate. The references cited by the Examiner, either alone or in combination, do not teach or suggest a composition that satisfies the limitations of the independent claims. Applicants point out that the arguments presented in this and the prior Office action response are not based on the intended use of the claimed composition.

Mueller discloses a chemical mechanical polishing (CMP) composition comprising an oxidizing agent such as  $\text{KHSO}_5$  and at least one catalyst, such as ferric nitrate. (col. 3, lines 10-11 and col. 6, line 1) Mueller further teaches the use of acetic acid as an additive to "stabilize[s] the oxidizer in the presence of the metal complex." (col. 7, lines 43-45). There is no teaching or suggestion anywhere in Mueller of a composition consisting essentially of potassium hydrogen peroxomonosulfate and acetic acid, as recited by the claims, since Mueller's composition includes a catalyst. As stated in the MPEP 2111.03:

The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original)

In column 3, lines 53-56, Mueller teaches: "The present invention relates to a chemical mechanical polishing composition that comprises at least one oxidizer and at

least one catalyst that promotes a chemical reaction between the oxidizer and a substrate metal layer." (Emphasis added.) Accordingly, the teachings of Mueller do not satisfy the requirements of the claim. Nor do the teachings of Ernst. Ernst recites the use of stabilizers such as phenol in an acetic acid solution that contains hydrogen peroxide. (abstract, col. 3, lines 44-49) There is no disclosure anywhere in Ernst of potassium hydrogen peroxomonosulfate, much less any teaching or suggestion of a composition consisting essentially of potassium hydrogen peroxomonosulfate and acetic acid.

Since the references cited by the Examiner, either alone or in combination, do not teach or suggest a composition that satisfies the limitations of the independent claims, a *prima facie* case of obviousness cannot be established. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1 and 17-27 under 35 U.S.C. § 103(a).

The Examiner further asserted that claims 1 and 17-27 are unpatentable over Condra et al. ("Condra," U.S. 5,259,979) in view of Kubotera et al. ("Kubotera," 4,297,436) and Ernst (3,869,401) under 35 U.S.C. § 103(a). Applicants respectfully disagree.

Independent claims 1 and 18 recite an anisotropic copper etching agent consisting essentially of potassium hydrogen peroxomonosulfate having a concentration within a range of about 0.08 to about 2.0 mol/l, and acetic acid in a range of about 10 wt.% to about 75 wt.% relative to the potassium hydrogen peroxomonosulfate. The references cited by the Examiner do not teach or suggest a composition that satisfies the limitations of the independent claims.

The microetch cleaning composition disclosed by Condra includes a metal salt oxidizing agent such as ferric chloride or potassium dichromate (abstract, col. 8, lines 4 and 40-41) and a pH control agent in an aqueous solution. (col. 5, lines 41-44) Acetic acid is not disclosed, and potassium hydrogen peroxomonosulfate is not a component of the microetch cleaning composition. Kubotera discloses etch bleaching solutions that include an oxidizing agent such as peroxodisulfates, a metal salt, and acetic acid. (col. 13, lines 22-35) Neither Kubotera nor Condra discloses potassium hydrogen

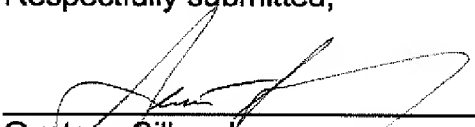
peroxomonosulfate, much less a composition consisting essentially of potassium hydrogen peroxomonosulfate and acetic acid.

Since the references cited by the Examiner, either alone or in combination, do not teach or suggest a composition that satisfies the limitations of the independent claims, a *prima facie* case of obviousness cannot be established. Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1 and 17-27 under 35 U.S.C. § 103(a).

### **SUMMARY**

Applicants believe that pending claims 1 and 17-27 are in condition for allowance. The Examiner is invited to contact the undersigned agent for Applicants via telephone if such communication would expedite the allowance of the pending claims.

Respectfully submitted,



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